

Appl. No. 10/064,620
Amdt. Dated Dec. 20, 2006
Reply to Final Office Action of October 13, 2006

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of image compression and decompression comprising:
providing a span of interest for an acquired image sequence, wherein the span of interest defines a time sequence and a space sequence in the acquired image sequence that includes analytically relevant information in the acquired image sequence and excludes other information in the acquired image sequence;
selecting a portion of the acquired an-image sequence in the a-span of interest, thereby selecting the analytically relevant information and sacrificing the other information obtained from an acquired imaging sequence;
applying lossless compression to the portion of the acquired image sequence in a span of interest and obtaining therefrom a compressed image sequence; and,
applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence; and
displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information,
wherein selecting the portion of image in the span of interest comprises:
 - selecting the portion of the image in a time sequence; and
 - selecting the portion of the image in a space sequence.
2. (currently amended) The method of claim 1, wherein the portion of the acquired image sequence is a plurality of frames in the a-span of interest.
3. (currently amended) The method of claim 1, wherein the portion of the acquired image sequence is at least one frame in the a-span of interest.
4. (currently amended) The method of claim 1 further comprising ~~comprises~~ archiving the analytically relevant image sequence.
5. (currently amended) The method of claim 1, wherein selecting the portion of the acquired image sequence in the span of interest comprises using ~~having~~ a user select option ~~for selecting the portion of image~~.
6. (original) The method of claim 5, wherein the user select option comprises segmenting an identifiable anatomy of a patient.
7. (original) The method of claim 5, wherein the user select option comprises manually marking frames of interest.
8. (original) The method of claim 5, wherein the user select option comprises sketch-gripping an image boundary.
9. (cancelled)

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10. (cancelled)

11. (cancelled)

12. (currently amended) A method of image compression and decompression for images obtained by an imaging device, ~~comprising: comprising:~~

providing a span of interest for an acquired image sequence received from the imaging device, wherein the span of interest defines a time sequence and a space sequence in the acquired image sequence that includes analytically relevant information in the acquired image sequence and excludes other information in the acquired image sequence;

selecting a portion of the acquired image sequence in the a-span of interest, thereby selecting the analytically relevant information and sacrificing the other information obtained from an acquired imaging sequence received from the device;

applying lossless compression to the portion of the acquired image sequence and obtaining therefrom a compressed image sequence; and,

applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence; and

displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information;

~~wherein selecting the portion of image in the span of interest comprises:~~

~~— selecting the portion of the image in a time sequence; and~~

~~— selecting the portion of the image in a space sequence.~~

13. (original) The method of claim 12, wherein the imaging device is a medical imaging device selected from a magnetic resonance imaging system, a computed tomography system, an x ray system, an x ray angiogram system and an ultrasound system.

14. (currently amended) A method of image compression and decompression for images obtained by an x ray device, ~~comprising: comprising:~~

providing a span of interest for the images obtained by the x ray device, wherein the span of interest defines a time sequence and a space sequence that includes analytically relevant information in the images and excludes other information in the images;

selecting at least one frame of interest in the a-span of interest, thereby selecting the analytically relevant information and sacrificing the other information obtained from the x ray device;

applying lossless compression to the at least one frame of interest and obtaining therefrom a compressed image sequence; and,

applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence; and

displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information;

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~~wherein selecting the at least one frame in the span of interest comprises:~~

- ~~— selecting the at least one frame in a time sequence; and~~
- ~~— selecting the at least one frame in a space sequence.~~

15. (currently amended) A method of image compression and decompression for images obtained by an x ray x-ray angiogram device, comprising:

providing a span of interest for the images obtained by the x ray angiogram device, wherein the span of interest defines a time sequence between two time instances that includes analytically relevant information in the images and excludes other information in the images;

selecting a plurality of frames of interest in the a-span of interest, thereby selecting the analytically relevant information and sacrificing the other information obtained from the x ray angiogram;

applying lossless compression to the plurality of frames of interest and obtaining therefrom a compressed image sequence; and,

applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence; and

displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information;

~~wherein selecting the plurality of frames of interest comprises selecting at least two time instances and capturing the frames of interest between the two time instances.~~

16. (currently amended) The method of claim 15, wherein the selecting at least two time instances comprise a first comprises selecting at least one time instance when a dye appears and capturing a second time instance when the dye disappears.

17. (currently amended) A method of image compression and decompression for images obtained by an MRI device, comprising:

providing a span of interest for the images obtained by the MRI device, wherein the span of interest defines a time sequence between two time instances that includes analytically relevant information in the images and excludes other information in the images;

selecting a plurality of frames of interest in the a-span of interest, thereby selecting the analytically relevant information and sacrificing the other information obtained from a MRI device;

applying lossless compression to the plurality of frames of interest and obtaining therefrom a compressed image sequence; and

applying decompression to the compressed image sequence data and obtaining therefrom an analytically relevant image sequence; and

displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information;

~~wherein selecting the plurality of frames of interest comprises selecting at least two time instances and capturing the frames of interest between the two time instances.~~

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18. (currently amended) The method of claim 17, wherein selecting the plurality of frames of interest comprises using a user select option for manually selecting the plurality of frames of interest in a space sequence.

19. (currently amended) ~~The A~~ method of claim 17, wherein selecting the plurality of frames of interest comprises using automatic edge detection techniques for selecting the plurality of frames of interest in a space sequence.

20. (currently amended) A method of image compression and decompression for images obtained by an ultrasound ~~device, system,~~ comprising:

providing a span of interest for the images obtained by the ultrasound device, wherein the span of interest defines a time sequence and a space sequence that includes analytically relevant information in the images and excludes other information in the images;

selecting at least one frame of interest in the a-span of interest, thereby selecting the analytically relevant information and sacrificing the other information obtained from the ultrasound device;

applying lossless compression to the least one frame of interest and obtaining therefrom a compressed image sequence; ~~and~~

applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence; ~~and~~

displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information;

~~wherein selecting the at least one frame in the span of interest comprises:~~

~~—selecting the at least one frame in a time sequence; and~~

~~—selecting the at least one frame in a space sequence.~~

21. (original) The method of claim 20, wherein selecting the at least one frame of interest comprises selecting a fan shaped image using automatic means.

22. (original) The method of claim 20, wherein selecting the at least one frame of interest comprises selecting a fan shaped image using manual means.

23. (currently amended) A method of image compression and decompression comprising:

providing a span of interest for an acquired image sequence, wherein the span of interest defines a time sequence and a space sequence in the acquired image sequence that includes analytically relevant information in the acquired image sequence and excludes other information in the acquired image sequence;

selecting a portion of the acquired an-image sequence in the a-span of interest, thereby selecting the analytically relevant information and sacrificing the other information obtained from an acquired imaging sequence;

applying lossy compression to the portion of the acquired image sequence in a span of interest and obtaining therefrom a compressed image sequence; ~~and,~~

applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence; and

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displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information;

~~wherein selecting the portion of image in the span of interest comprises:~~

~~—selecting the portion of the image in a time sequence; and~~

~~—selecting the portion of the image in a space sequence.~~

24. (currently amended) An imaging system comprising:

a span of interest definer block for selecting a portion of an image sequence in a span of interest for the image from an imaging sequence, wherein the span of interest defines a time sequence and a space sequence in the image sequence that includes analytically relevant information in the image sequence and excludes other information in the image sequence, thereby selecting the analytically relevant information and sacrificing the other information;

an image compression block for compressing the portion of the image sequence in the span of interest;
and,

an image decompression block for decompressing and reconstructing the compressed image sequence;
and

a display for displaying the reconstructed image sequence, thereby displaying the analytically relevant information without displaying the other information;

~~wherein selecting the portion of image in the span of interest comprises:~~

~~—selecting the portion of the image in a time sequence; and~~

~~—selecting the portion of the image in a space sequence.~~

25. (currently amended) The imaging system of claim 24, wherein the portion of the image sequence is at least one frame in the a-span of interest.

26. (currently amended) The imaging system of claim 24, wherein the portion of the image sequence is a plurality of frames in the a-span of interest.

27. (cancelled)

28. (cancelled)

29. (cancelled)

30. (cancelled)

31. (currently amended) A computer program encoded on a machine readable medium comprising an algorithm for:

selecting a portion of an acquired image sequence in a span of interest for the obtained from an acquired image imaging sequence, wherein the span of interest defines a time sequence and a space sequence in the acquired image sequence that includes analytically relevant information in the acquired image sequence and excludes other information in the acquired image sequence, and selecting the portion of the acquired image sequence selects the analytically relevant information and sacrifices the other information;

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applying lossless compression to the portion of the acquired image sequence in a span of interest and obtaining therefrom a compressed image sequence; ~~and,~~

applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence; and

displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information,

~~wherein selecting the portion of image in the span of interest comprises:~~

~~—selecting the portion of the image in a time sequence; and~~

~~—selecting the portion of the image in a space sequence.~~

32. (new) A method of image compression and decompression in an x ray angiogram device, comprising: providing a span of interest for an acquired image sequence obtained by the x ray angiogram device, wherein the span of interest defines a time sequence and a space sequence in the acquired image sequence that includes analytically relevant information in the acquired image sequence and excludes other information in the acquired image sequence, and the time sequence is based on a dye that is injected and tracked within a subject and increases visibility of blood vessels against surrounding tissues in the acquired image sequence;

selecting a portion of the acquired image sequence in the span of interest, thereby selecting the analytically relevant information and sacrificing the other information;

applying lossless compression to the portion of the acquired image sequence and obtaining therefrom a compressed image sequence;

applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence; and

displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information.

33. (new) The method of claim 32, wherein the time sequence begins when the dye appears in the acquired image sequence and the time sequence ends when the dye disappears in the acquired image sequence.

34. (new) The method of claim 32, wherein the space sequence is defined by a collimator ring.

35. (new) The method of claim 32, wherein the space sequence is defined by a binary mask.

36. (new) The method of claim 32, wherein the portion of the acquired image sequence is confined within a comparatively small time and space of the acquired image sequence.

37. (new) The method of claim 32, wherein the portion of the acquired image sequence is provided by frames of interest, the acquired image sequence is provided by total frames, and a ratio of the frames of interest to the total frames is in the range of 46.83 to 76.47 percent.

38. (new) The method of claim 32, wherein a compression ratio for the portion of the acquired image sequence has an improvement over a compression ratio for the acquired image sequence in the range of 13.15 to 18.96 percent.